



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,702	02/09/2004	Ikuya Yagisawa	IIP-5094	9171
24956 7590 08/30/2007 MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C. 1800 DIAGONAL ROAD SUITE 370 ALEXANDRIA, VA 22314			EXAMINER BRADLEY, MATTHEW A	
			ART UNIT 2187	PAPER NUMBER
			MAIL DATE 08/30/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/775,702

Applicant(s)

YAGISAWA ET AL.

Examiner

Matthew Bradley

Art Unit

2187

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 22-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22, 23, 28-34 and 39-43 is/are rejected.
- 7) ☒ Claim(s) 24-27 and 35-38 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

This Office Action has been issued in response to amendment filed 3 August 2007. Applicant's arguments have been carefully and fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made. Accordingly, this action has **NOT** been made final.

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

### *Claim Status*

Claims 22-43 remain pending and are ready for examination.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims **22-23**, **28-34**, and **39-43** rejected under 35 U.S.C. 102(b) as being anticipated by Bandera et al (U.S. 6,223,252), hereinafter referred to as Bandera.

As per independent claims **22** and **33**, Bandera teach,

- a plurality of disks including first disks configuring a RAID group and at least one second disk, wherein each of the first disks store one of data received from a computer coupled to the storage system or parity data

used for recovering the data received from the computer, and wherein the at least one second disk is to be used as a spare disk; and (Column 3 lines 22-43 as shown in Figure 1 item 110: taught as the disk array for first disks, and the at least one hot spare drive as the second disk to be used as a spare disk)

- a control section configured to hold an error status of each of the first disks, and (Column 3 line 62 to Column 4 line 1: taught as error information)
- to start to mirror data between one of the first disks and the at least one second disk when the error status of the one of the first disks matches a predetermined first criterion, wherein, (Column 5 lines 44-53)
- after starting to mirror data between the one of the first disks and the at least one second disk, the control section is configured to stop mirroring data between the one of the first disks and the at least one second disk and start to mirror data between another one of the first disks and the at least one second disk, according to the error status of the one of the first disks and the another one of the first disks (Figure 2C as taught in Column 6 line 63 to Column 7 line 7).

As per dependent claims **23** and **34**, Bandera teach, the control section is configured to compare the error status of each of the first disks, and based on the result of error status comparison between the one of the first disks and the another one of the first disks, the control section is configured to stop mirroring data between the one of the

Art Unit: 2187

first disks and the at least one second disk and start to mirror data between the another one of the first disks and the at least one second disk (Column 6 lines 31-52: taught as the predictive failure analysis and switching of the drive to be mirrored to the hot spare based on the comparison of the data between the drives of the information gathered from the analysis).

As per dependent claims **28** and **39**, Bandera teach, wherein the error status of each of the first disks is an error count of each of the first disks, and when the error count of the another one of the first disks becomes larger than the error count of the one of the first disks, the control section is configured to stop mirroring data between the one of the first disks and the at least one second disk and start to mirror data between the another one of the first disks and the at least one second disk (Column 6 lines 31-52: taught as the seek errors for example, and switching of drive to be mirrored based on the seek error count as determined by the predictive failure analysis).

As per dependent claims **29** and **40**, Bandera teach, wherein information indicating a pair of disks configuring a mirroring pair is output from the storage system to a management computer coupled to the storage system (Column 3 lines 39-52: taught as the embodiment of a storage subsystem and indication of the mirror drive to "global" hot spare to the system).

As per dependent claims **30** and **41**, Bandera teach, wherein the predetermined first criterion is updated based on the error status of the first disks configuring a RAID group (Column 6 lines 31-52: taught as the predictive failure analysis and gathering of data during the period used for the analysis).

Art Unit: 2187

As per dependent claims **31** and **42**, Bandera teach, wherein the control section is configured to start to mirror data between said another one of the first disks and the at least one second disk before a plan of mirroring data between said one of the first disks and the at least one second disk is completed (Figure 2C as taught in Column 6 line 63 to Column 7 line 7: taught as the stopping of the mirroring between the selected drive to be mirrored and the hot spare before the mirroring is complete).

As per dependent claims **32** and **43**, Bandera teach, wherein the control section is configured to start to mirror data between said another one of the first disks and the at least one second disk, if the error status of said another one of the first disks is greater than or equal to the error status of said one of the first disks (Column 6 lines 31-52: taught as the seek errors for example, and switching of drive to be mirrored based on the increased seek error count of the predicted drive to be failed over the initial mirror drive as determined by the predictive failure analysis and gathering of data pertinent to the drives).

### ***Allowable Subject Matter***

Claims **24-27** and **35-38** are objected to as being dependent upon rejected independent claims 22 and 33 respectively, but would be allowable if rewritten in correct and independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

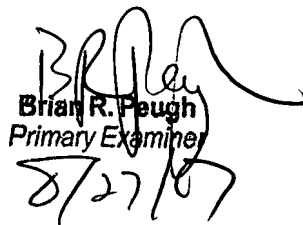
Art Unit: 2187

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew Bradley whose telephone number is (571) 272-8575. The examiner can normally be reached on 6:30-3:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald A. Sparks can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BRP/mb



Brian R. Peugh  
Primary Examiner  
8/27/07